GROUNDWATER SIMULATOR MINI EXERCISE #2

Where's the Flow Going to Go?

Created by CREEK CONNECTIONS

Student Name: _____

Class: _____

Object: Predict and observe the direction and path of groundwater flow from various locations on the simulator.

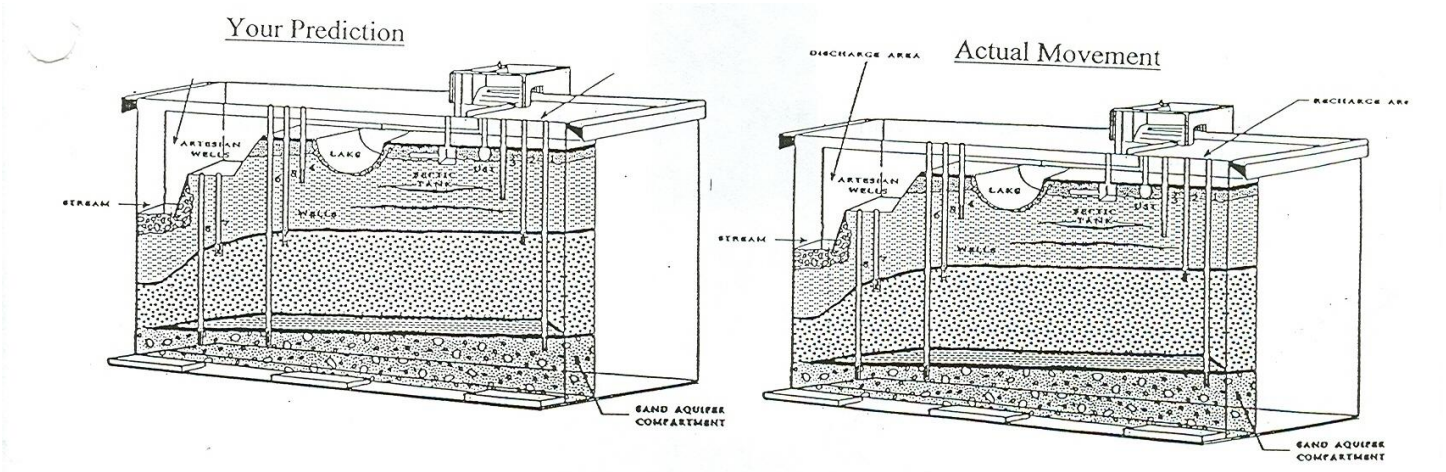
Time Needed: 10 minutes

Simulator Conditions: Slide the simulator aquarium pump so that the full amount of flow is being delivered to the recharge area (slide pump to the right). Make sure that the aquifer compartment drain valve at the bottom of the simulator's back water reservoir is closed. Make sure the stream drain valve is open. Make sure the lake drain valve is closed.

Materials needed: Skinny eyedropper, washing squirt bottle, 2 colors of food coloring (dye)

Procedure

1. On the below left illustration, predict where you think groundwater flows starting at the bottom of Well #3 and again starting at the bottom of Well #2. Draw arrows to show the path of the groundwater flow and ultimately where it ends up.



2. Carefully extract a small amount of red dye using the skinny eyedropper, stick the eyedropper down into Well #3, release the red dye into the well. Take the washing squirt bottle, slowly squirt and force the dye out of the bottom of the well so that a "nickel sized" to "quarter sized" amount of dye is in the sand.

3. Repeat this procedure with a different color of dye and inject it into Well #2.

4. Watch and record the path of the groundwater flow (your dye colors) on the above right illustration.

Continued →

Questions

A. Compare your predictions to what you actually observed. Did the groundwater end up anywhere that you did not expect? If so, where?

B. What caused the groundwater to move downward initially?

C. What caused the groundwater to start moving horizontally from left to right?

D. What caused the groundwater to defy gravity and go up toward the stream and into well #7?

E. Why did the groundwater from Well #2 not go downward through the gray shale layer (aquitard)?

Other OPTIONAL explorations:

- Wait until you do Mini-Exercise #3 – Where's the Deeper Flow Going to Go?